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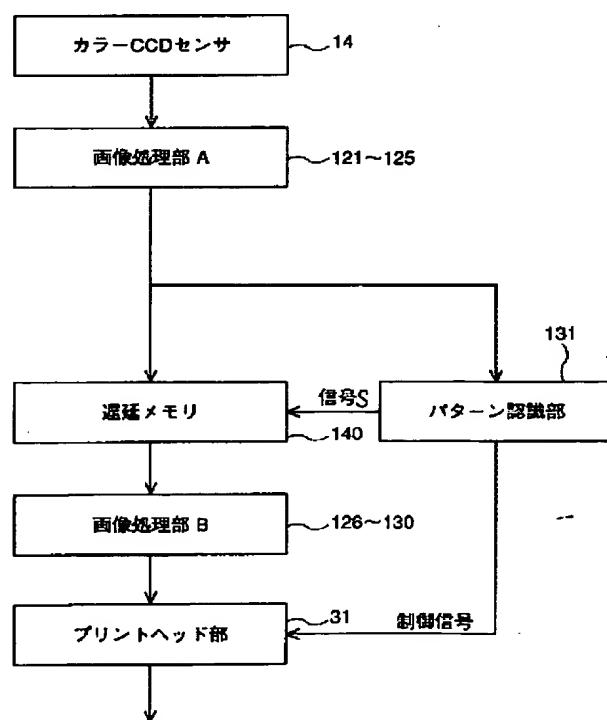
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(54)【発明の名称】 画像形成装置

(57)【要約】

【課題】 簡素な構成で、予め画像の形成を禁止するよう指定した原稿に対して、一部の画像でも形成することがない画像形成装置を提供する。

【解決手段】 本デジタルカラー複写機は、カラーCCDセンサ14によって原稿の画像から画像データを生成し、画像データが予め記憶された複写禁止物の画像データを含んでいるか否かをパターン認識部131で判断する。生成された画像データが複写禁止物の画像データを含んでいないと判断された場合画像データに基づいて画像が形成され、生成された画像データが複写禁止物の画像データを含んでいると判断された場合画像の形成は妨害される。本デジタルカラー複写機では、生成された画像データは遅延メモリに140に記憶され、プリントヘッド部31への画像データの転送が遅延され、画像のプリント動作の開始が遅延される。



【特許請求の範囲】

【請求項1】 原稿の画像から画像データを生成し、前記生成された画像データが予め指定された画像データを含んでいるか否かを判断し、前記生成された画像データが前記指定された画像データを含んでいないと判断した場合前記画像データに基づいて画像を形成し、前記生成された画像データが前記指定された画像データを含んでいると判断した場合前記画像の形成を妨害する画像形成装置であって、

前記画像の形成の開始を遅延させることを特徴とする画像形成装置。
10

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、画像形成装置に関し、特に、原稿の画像から画像データを生成し、画像データが予め指定された画像データを含んでいるか否かを判断する画像形成装置に関する。

【0002】

【従来の技術】従来より、デジタルカラー複写機の精度の向上に伴なって紙幣、小切手、有価証券などの偽造が問題となっている。このようなデジタルカラー複写機を用いての偽造に対処するために、特開昭55-111977号公報に開示されている複写機では、紙幣、小切手、有価証券などの複写禁止物の画像データが予め記憶され、複写動作中に原稿の画像データとこれらの複写禁止物の画像データのパターンマッチングが行なわれ、このパターンマッチングによって原稿が複写禁止物に該当すると判断された場合、複写紙上への画像の形成が禁止される。

【0003】

【発明が解決しようとする課題】しかしながら、前述した従来のデジタルカラー複写機で、複写禁止物が多い今日、順次パターンマッチングをさせていくと、パターンマッチングの処理の最後のほうで複写禁止物と判断された際にはほとんど複写動作が終了しており、複写禁止物と判断された時点で複写動作を禁止しても通常通り複写されている部分があることがある。

【0004】このような従来のデジタルカラー複写機での複写禁止物に対する画像の形成を次に図5を用いて説明する。

【0005】図5は、従来のデジタルカラー複写機の読み取り信号処理部20の構成を説明するためのブロック図である。従来のデジタルカラー複写機の全体構成は、後に図1を用いて説明する本発明の実施の形態の1つであるデジタルカラー複写機と同様である。

【0006】従来のデジタルカラー複写機の読み取り信号処理部20(図1参照)では、カラーCCDセンサ14によって得られたR、G、Bの3色の多値電気信号は、まず、アナログ処理部121で増幅され最適化処理が施され、これらの電気信号は、A/D変換部122で

R、G、Bの多値デジタル信号にそれぞれ変換される。

【0007】A/D変換部122により出力されるデジタル信号は、シリアル信号化処理部123を介してシェーディング補正部124に入力される。シェーディング補正部124では原稿を走査する前に読み取った白色板16(図1参照)のRGBデジタル画像データに基づいてシェーディング補正が実行され、シェーディング補正されたデータはセンサ窓位置補正部125を介して反射率/濃度変換部126とパターン認識部131とに出力される。

【0008】反射率/濃度変換部126では、反射率データであるR、G、Bデータは256濃淡階調データであるDR、DG、DBデータに変換され、DR、DG、DBデータはUCR/BPマスキング処理部127に出力される。UCR/BPマスキング処理部127では、DR、DG、DBデータはC、M、Y、Bkの256濃淡階調データに変換され、黒色の再現性を向上させるために黒色の部分に対してC、M、Yのデータ値が除去され(UCR処理)、代わりにBkの濃淡階調データが加えられる(BP処理)。この後、カラーCCDセンサ14(図1参照)の読み取り特性とトナーの複写紙に対する付着特性とが考慮されて、複写紙上に原稿と同一の色が再現されるように所定のマスキング処理が施された後、印字工程に応じた色のデータが出力される。

【0009】UCR/BPマスキング処理部127から出力されるC、M、Y、Bkのうちのいずれか1色のデータには、MTF補正部128で平滑化やエッジ強調等の空間フィルタ処理が施される。変倍移動処理部129では、MTF補正部128からのデータが用いられて、設定されている複写倍率や編集内容に応じて所定の変倍移動処理が実行される。その後、γ補正部130では、入力されるデータに所定の階調補正が施された後、これらのデータはプリントヘッド部31に出力される。プリントヘッド部31では、入力される階調データはD/A変換されて半導体レーザ駆動信号が生成され、この駆動信号によって半導体レーザが発光され、感光体ドラム41(図1参照)が露光される。

【0010】次に、複写禁止物の画像の形成を禁止するためのパターン認識部131について説明する。

【0011】シェーディング補正されたデータは、前述したようにシェーディング補正処理部124からセンサ窓位置補正部125を介して反射率/濃度変換部126に出力されるとともに、パターン認識部131へも転送される。パターン認識部131は、複写禁止原稿の特徴部分を記憶するROM132とパターン認識部131へ送られる画像データを記憶する画像メモリ134と記憶された画像と複写禁止原稿の画像を比較判断するパターンマッチング部136とを含んでいる。

【0012】送られてくる画像データはパターンマッチング部136で複写禁止原稿の画像データと比較され、

一致度が高い場合には複写禁止信号（制御信号）が発生されプリントヘッド部31へ伝えられる。これによつて、黒塗りのデータが送られ、一致度が高いと判断された時点から後は複写紙は塗りつぶされ、複写禁止物の画像の形成が禁止される。

【0013】複写禁止物の画像データが少なく、記憶される全ての複写禁止物との一致度が短時間に判断できる場合は問題とはならないが、複写禁止物は世界中の紙幣、小切手、有価証券、回数券、各種チケット、切手、収入印紙、駐車券等数多く存在し、複写禁止物の特徴部分を記憶するROM132の内容は多くなる。

【0014】このようなデジタルカラー複写機で、たとえば、印字工程の順序をC、M、Y、BkとしC、M、Yのときにはどの複写禁止原稿とも一致度が低く複写動作を継続していたが、最後のBkの途中で一致度が高いと判断された場合、また、ROM132に記憶されている原稿と一致度の高い複写禁止物のデータがパターンマッチングされる順序が最後になる場合、判断された時点から複写紙が黒塗りにされても、判断される直前までは通常通りC、M、Y、Bkのデータに対応して複写が行なわれており、この部分に限っては違法なコピーを行なうことが可能である。

【0015】従来のデジタルカラー複写機で、上述のような方式を用いて、完全に違法なコピーがされないようにするために、ROM132に記憶する複写禁止物の種類を削減する必要がある。また、タンデム方式のフルカラー複写機に見られるように、スキャン回数が1回だけのものもあり、この場合、画像の形成に要する時間はさらに短くなり、複写禁止物の種類をさらに削減しなくてはならなくなる。

【0016】本発明は、このような問題点を解決するためになされたもので、その目的は、簡素な構成で、予め画像の形成を禁止するよう指定した原稿に対して、一部の画像でも形成することのない画像形成装置を提供することである。

【0017】

【課題を解決するための手段】請求項1に記載の発明は、原稿の画像から画像データを生成し、生成された画像データが予め指定された画像データを含んでいるか否かを判断し、生成された画像データが指定された画像データを含んでいないと判断した場合画像データに基づいて画像を形成し、生成された画像データが指定された画像データを含んでいると判断した場合画像の形成を妨害する画像形成装置である。

【0018】本画像形成装置は、画像の形成の開始を遅延させることを特徴としている。請求項1に記載の発明によると、画像の形成の開始が遅延される。これにより、簡素な構成で、原稿から生成される画像データが予め指定された画像データを含んでいるか否かの判断に多くの時間を要しても、この原稿に対して一部の画像でも

形成することがない画像形成装置が提供される。

【0019】

【発明の実施の形態】以下、図面を参照しつつ、本発明の実施の形態であるデジタルカラー複写機について説明する。

【0020】図1は、本発明の第1の実施の形態であるデジタルカラー複写機の全体構成を示す模式的断面図である。デジタルカラー複写機は、大きくは、原稿画像を読み取るイメージリーダ部100と、イメージリーダ部100で読み取った画像を再現する本体部200とに分けられる。

【0021】イメージリーダ部100にはスキャナ部10とモータ11とプラテン15と白色板16と読み取り信号処理部20とが含まれ、本体部200にはプリントヘッド部31と反射鏡37と感光体ドラム41とイレーサランプ42と帶電チャージャ43とトナー現像器45a～45dと転写チャージ46と分離爪47と定着装置48と排紙トレイ49と用紙カセット50と転写ドラム51とチャッキング機構52とが含まれる。

【0022】また、スキャナ部10は、露光ランプ12、ロッドレンズアレイ13、カラーCCDセンサ14を備え、カラーCCDセンサ14は、RGBデジタル画像データをそれぞれ読み取るための、Rデータ用CCDセンサとGデータ用CCDセンサとBデータ用CCDセンサとの3ラインのCCDセンサからなる。

【0023】本デジタルカラー複写機では、原稿を読み取る際には、スキャナ部10がモータ11によって矢印の方向（副走査方向）に移動され、シェーディング補正のための白色板16が走査された後にプラテン15上に載置された原稿が走査される。スキャナ部10の露光ランプ12によって原稿に光が照射されると、原稿からの反射光はロッドレンズアレイ13によって集光され、カラーCCDセンサ14によって集光された光は電気信号に変換される。前述のように3ラインのカラーCCDセンサ14は、R、G、Bの3色の多値電気信号を出力し、R、G、Bの多値電気信号は、読み取り信号処理部20でY、M、C、Bk（イエロー、マゼンダ、シアン、ブラック）のいずれかの256濃淡階調データに変換される。

【0024】プリントヘッド部31では、読み取り信号処理部20から出力されるY、M、C、Bkのいずれかの256階調データがD/A変換されレーザダイオード駆動信号が生成される。このレーザダイオード駆動信号によりプリントヘッド部31内のレーザダイオードが駆動される。

【0025】このようにして駆動されるレーザダイオードにより発光されるレーザビームは、反射鏡37を介して、回転駆動される感光体ドラム41を露光し、感光体ドラム41の感光体上に原稿の画像が形成される。この感光体ドラム41は1複写毎に露光を受ける前にイレ-

サンプル42に照射され帶電チャージャ43により一様に帶電されており、露光によって感光体ドラム41上には静電潜像が形成される。このように形成される静電潜像に対してY、M、C、Bkのトナー現像器45a～45dのうちのいずれか一つが選択され、感光体ドラム41上の静電潜像が現像される。

【0026】これらのような原稿の走査から現像までの印字過程は、それぞれY、M、C、Bkについて繰り返して4回行なわれ、感光体ドラム41と転写ドラム51の動作に同期してスキャナ部10はスキャン動作を繰り返す。これらの後、分離爪47が作動されて複写紙は転写ドラム51から分離される。複写紙上のトナーは定着装置48により定着され、複写紙は排紙トレイ49上に排紙される。なお、複写紙は用紙カセット50から給紙され、転写時に位置ずれが生じないように転写ドラム51上のチャッキング機構52によりその先端がチャッキングされる。

【0027】次に、上述のような本デジタルカラー複写機での複写禁止物に対する処理について図2を用いて説明する。

【0028】図2は、本デジタルカラー複写機の読み取り信号処理部20の構成を説明するためのブロック図である。この図2では、図5に示す従来のデジタルカラー複写機の読み取り信号処理部20と同様の部分には同様の符号を用いている。

【0029】本デジタルカラー複写機では、図5とともに説明した従来のデジタルカラー複写機での画像処理の流れに従って、画像処理部A（アナログ処理部121、A/D変換部122、シリアル信号化処理部123、シェーディング補正部124、センサ窓位置補正部125）での処理を終えた後、画像データは、遅延メモリ140に格納されると同時に、パターン認識部131の画像メモリ134にも格納される。遅延メモリ140に格納された画像データは、パターン認識部131から所定の信号Sが送られてくるまで遅延メモリ140内に保持され、その後、画像処理部B（反射率／濃度変換部126、UCR/BPマスキング処理部127、MTF補正部128、変倍移動処理部129、γ補正部130）へと転送される。ここで、パターン認識部131からの所定の信号Sとしては、パターンマッチングが終了したことを伝える信号、残りのパターンマッチングにかかる時間がある所定時間内になったことを伝える信号、あるいは、原稿の画像データが複写禁止物と一致したと判断されたことを伝える信号などを用いることができる。

【0030】また、遅延メモリ140が画像処理部Bに画像データを転送するタイミングは、パターン認識部131からのある信号が送られてくるまでの代わりに、タマで予め定められた時間が経過するまでとすることもできる。

【0031】遅延メモリ140で画像データの転送が遅

延されている間に、パターン認識部131の画像メモリに格納された画像データは、複写禁止物の画像データが格納されているROM（図5のROM132と同様）から呼び出されたデータと、形状、色、濃度分布などが比較されて、パターンマッチングが行なわれる。その結果、あるしきい値を超えた場合には、原稿は複写禁止物であると判断され、画像の形成を無効化するための無効化処理を行なうよう複写工程に制御信号による指示が送られる。

【0032】この無効化処理によって、具体的には、原稿が複写禁止物であると判断された際には、画像濃度データは全て255となるようにプリントヘッド部31に画像データが転送される等の処理が施され、これによって画像全体が塗りつぶされる。このとき、本デジタルカラー複写機では、従来のデジタルカラー複写機とは異なり、複写工程で画像データが遅延メモリ140で保持されていた遅れによって複写紙全体を塗りつぶすことが可能となる。

【0033】以上のような本デジタルカラー複写機またはこれらと同様であり印字方式が異なるタンデム方式のデジタルカラー複写機での、遅延メモリ140にて画像処理部Bへの画像データの転送を遅延させる時間について検討する。

【0034】図3は、パターン認識部131から遅延メモリ140への所定の信号Sを送るタイミングを説明するための図である。図3(a)はタンデム方式のデジタルカラー複写機で遅延メモリ140から画像処理部Bに向けて画像データの転送を開始した後Bkの画像データに対応する印字を開始するまでの時間を示す図であり、図3(b)はタンデム方式以外のデジタルカラー複写機で遅延メモリ140から画像処理部Bに向けて画像データの転送を開始した後Bkの画像データに対応する印字を開始するまでの時間を示す図であり、図3(c)は遅延メモリ140で遅延させる時間を説明するための図である。

【0035】これらの図3(a)～図3(c)において、パターン認識部131にてパターンマッチングを開始する時刻（遅延メモリ140に画像データが転送される時刻）を時刻O、遅延メモリ140から画像処理部B(図2参照)に向けて画像データの転送を開始する時刻を時刻A、Bkの画像データに対応する印字を開始する時刻を時刻Cとすると、時刻Oから時刻Cまでをパターンマッチングに要する時間T、時刻Aから時刻Cまでを遅延メモリ140から画像処理部Bに向けて画像データの転送を開始した後Bkの画像データに対応する印字を開始するまでの時間t1と表せる。

【0036】図3(a)、図3(b)では、遅延メモリ140から画像処理部Bに向けて画像データの転送を開始した後、無効化処理の黒塗りのためのBkの画像データに対応する印字を開始するまでの時間t1がタンデム

方式のデジタルカラー複写機ではタンデム方式以外のデジタルカラー複写機よりも短いことを示しており、この時間 t_1 の経過までにパターンマッチングは完了していなければならない。

【0037】すなわち、図3(c)に示すように、遅延メモリ140にて画像処理部Bへの画像データの転送を遅延させる時間は、時間 t_1 に応じて、最長で時刻Oから時刻Aまでの時間 ($T - t_1$) とすればよい。また、パターンが一致することを伝える一致信号を用いて、時刻Oから時間 ($T - t_1$) の経過前の時刻Bにパターンの一一致が確定しパターンマッチングが終了した際、その時点Bに無効化処理の黒塗りのためのBkの画像データを遅延メモリ140から出力させることができる。

【0038】これらによって、簡素な構成で、原稿から生成される画像データが予め指定された画像データを含んでいるか否かの判断に多くの時間を要しても、この原稿に対して一部の画像でも形成することがないデジタルカラー複写機が提供される。

【0039】また、次のように遅延メモリを用いることができる。この遅延メモリを有する本発明の第2の実施の形態であるデジタルカラー複写機での画像の入力／処理とプリント動作とのタイミングシーケンスを従来のデジタルカラー複写機と比較しつつ説明する。

【0040】図4は本発明の第2の実施の形態であるデジタルカラー複写機での画像の入力とプリント動作とのタイミングシーケンスを示す図であり、図6は従来のデジタルカラー複写機での画像の入力／処理とプリント動作とのタイミングシーケンスを示す図である。第2の実施の形態のデジタルカラー複写機の全体構成、読み取り信号処理部の構成等は、第1の実施の形態のデジタルカラー複写機の全体構成、読み取り信号処理部20の構成等と同様であるものとする。

【0041】従来のデジタルカラー複写機では、画像の入力／処理とプリント動作とはほぼ同時に時間 t_0 内に行なわれ、パターンマッチングについてもこの時間 t_0 内に処理される。これに対して、本デジタルカラー複写機では、画像の入力(原稿の読み込み)と遅延メモリへの画像データの格納とはほぼ同時に行なわれるが、プリント動作は画像の入力に対して遅延されて行なわれる。

【0042】本デジタルカラー複写機は1頁分の遅延メモリを有し、この遅延メモリによりプリント動作が1頁分遅らせられる。本デジタルカラー複写機では、時間 t_1 内にY、M、C、Bkの4頁分のデータに対するパターンマッチングが完了され、無効化処理を行なう黒塗りのための最終のBkの印字に間に合わせることができる

よう画像データの転送が遅延メモリによって遅らせられる。

【0043】これらによって、簡素な構成で、原稿から生成される画像データが予め指定された画像データを含んでいるか否かの判断に多くの時間を要しても、この原稿に対して一部の画像でも形成することがないデジタルカラー複写機が提供される。

【図面の簡単な説明】

【図1】本発明の第1の実施の形態であるデジタルカラー複写機の全体構成を示す模式的断面図である。

【図2】本デジタルカラー複写機の読み取り信号処理部20の構成を説明するためのブロック図である。

【図3】パターン認識部131から遅延メモリ140への所定の信号Sを送るタイミングを説明するための図である。

【図4】本発明の第2の実施の形態である画像の入力とプリント動作とのタイミングシーケンスを示す図である。

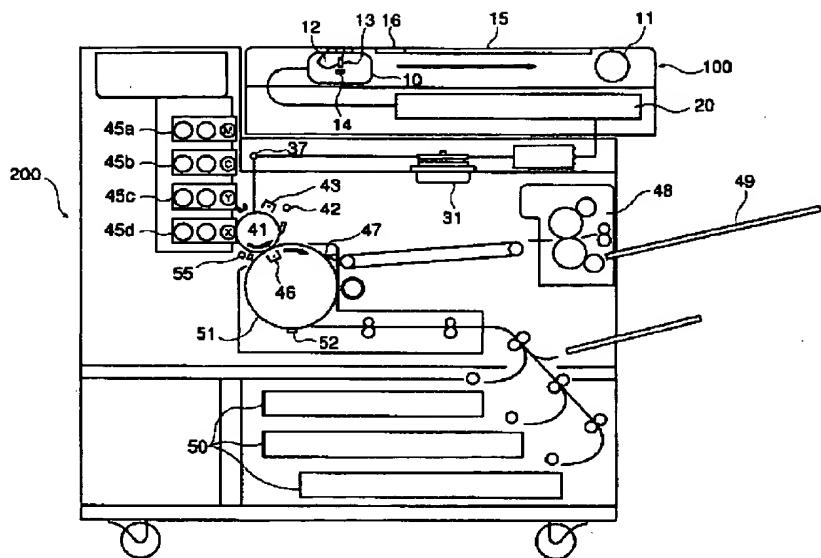
【図5】従来のデジタルカラー複写機の読み取り信号処理部20の構成を説明するためのブロック図である。

【図6】従来のデジタルカラー複写機での画像の入力／処理とプリント動作とのタイミングシーケンスを示す図である。

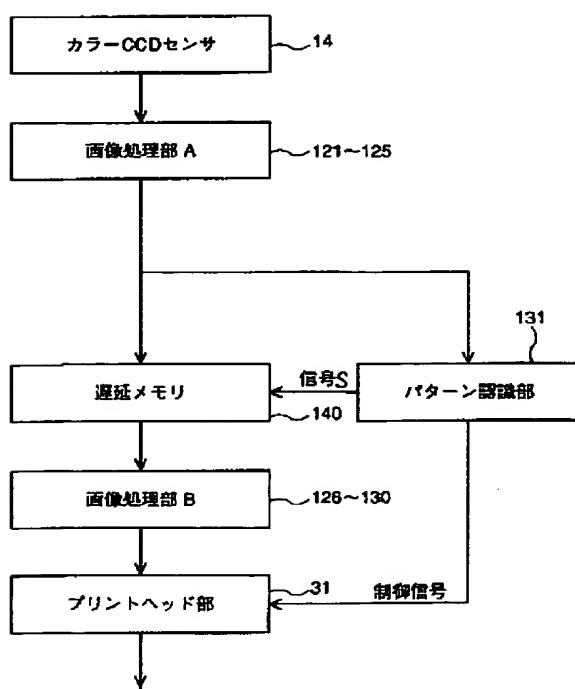
【符号の説明】

1 0	スキャナ部
1 4	カラーCCDセンサ
2 0	読み取り信号処理部
3 1	プリントヘッド部
1 0 0	イメージリーダ部
1 2 1	アナログ処理部
1 2 2	A/D変換部
1 2 3	シリアル信号化処理部
1 2 4	シェーディング補正処理部
1 2 5	センサ窓位置補正部
1 2 6	反射率／濃度変換部
1 2 7	UCR/BPマスキング処理部
1 2 8	MTF補正部
1 2 9	変倍移動処理部
1 3 0	γ 補正部
1 3 1	パターン認識部
1 3 2	ROM
1 3 4	画像メモリ
1 3 6	パターンマッチング部
1 4 0	遅延メモリ
2 0 0	本体部

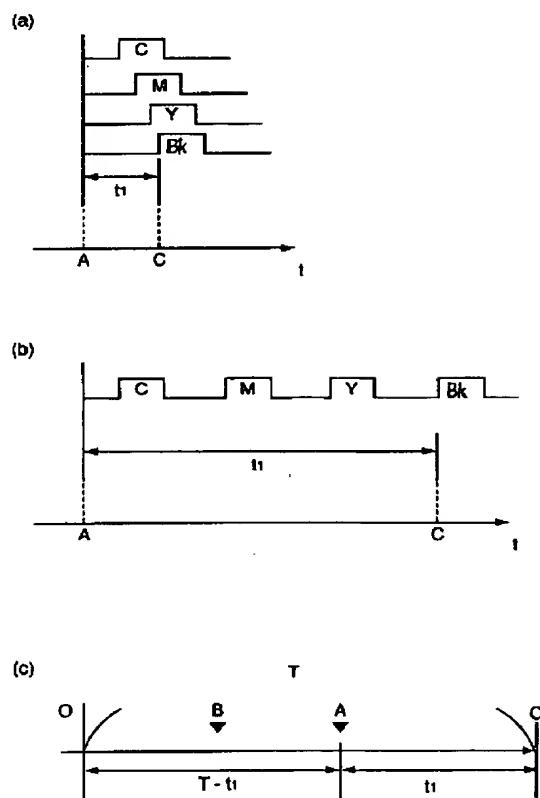
【図1】



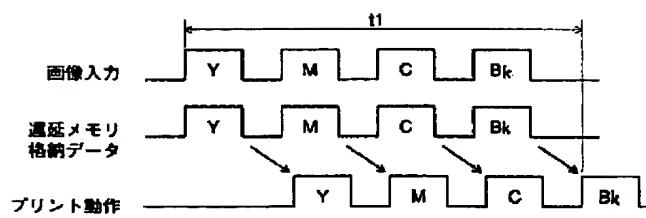
【図2】



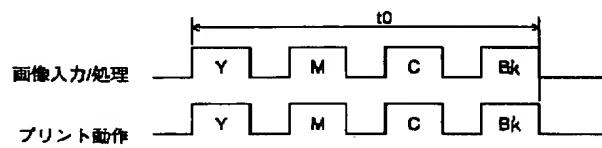
【図3】



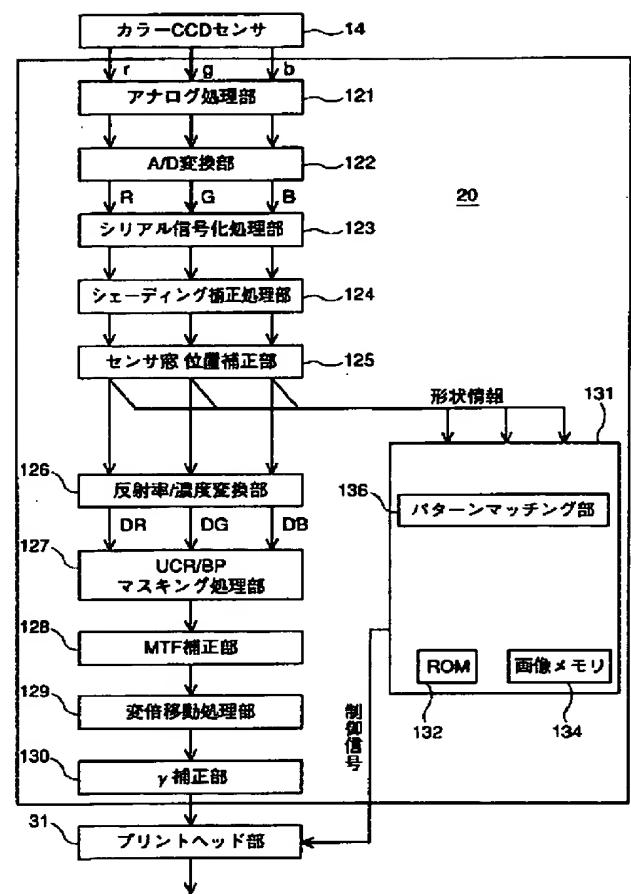
【図4】



【図6】



【図5】



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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. *** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] Generate image data from the image of a manuscript and it judges whether the image data as which said generated image data was specified beforehand is included. When it is judged that said generated image data does not contain said specified image data, an image is formed based on said image data. Image formation equipment which is image formation equipment which blocks formation of said image when it is judged that said generated image data contains said specified image data, and is characterized by delaying initiation of formation of said image.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] Especially this invention generates image data from the image of a manuscript about image formation equipment, and it is related with the image formation equipment which judges whether the image data as which image data was specified beforehand is included.

[0002]

[Description of the Prior Art] Conventionally, forgery of a bill, a check, negotiable securities, etc. poses a problem with improvement in the precision of a digital color copying machine. In order to cope with the forgery using such a digital color copying machine, with the copying machine currently indicated by JP,55-111977,A, the image data of copy prohibition objects, such as a bill, a check, and negotiable securities, is memorized beforehand, pattern matching of the image data of a manuscript and the image data of these copy prohibition objects is performed during copy actuation, and when it is judged that a manuscript corresponds to a copy prohibition object with this pattern matching, formation of the image in the copy paper is forbidden.

[0003]

[Problem(s) to be Solved by the Invention] However, the part which usually passes and is copied with the conventional digital color copying machine mentioned above today with many copy prohibition objects even if it forbids copy actuation when are judged as a copy prohibition object in the way of the last of processing of Bataan matching, and copy actuation is almost completed and it is judged as a copy prohibition object if pattern matching is carried out one by one may be.

[0004] Below, drawing 5 is used and formation of the image to the copy prohibition object in such a conventional digital color copying machine is

explained.

[0005] Drawing 5 is a block diagram for explaining the configuration of the reading signal-processing section 20 of the conventional digital color copying machine. The conventional digital color copying machine whole configuration is the same as that of the digital color copying machine which is one of the gestalten of the operation of this invention which uses and explains drawing 1 later.

[0006] In the reading signal-processing section 20 (refer to drawing 1) of the conventional digital color copying machine, the multiple-value electrical signal of three colors of R, G, and B which were obtained by the color CCD sensor 14 is first amplified in the analog processing section 121, optimization processing is performed, and these electrical signals are changed into the multiple-value digital signal of R, G, and B in the A/D-conversion section 122, respectively.

[0007] The digital signal outputted by the A/D-conversion section 122 is inputted into the shading compensation section 124 through the serial signal-ized processing section 123. In the shading compensation section 124, the data with which the shading compensation of the shading compensation was performed and carried out based on the RGB digital image data of the white plate 16 (refer to drawing 1) read before scanning a manuscript are outputted to a reflection factor / concentration converter 126, and the pattern recognition section 131 through the sensor aperture location amendment 125.

[0008] In a reflection factor / concentration converter 126, R and G which are reflection factor data, and B data are changed into DR and DG which are 256 shade gradation data, and DB data, and DR, DG, and DB data are outputted to the UCR/BP masking processing section 127. In the UCR/BP masking processing section 127, DR, DG, and DB data are changed into the 256 shade gradation data of C, M, Y, and Bk, in order to raise black repeatability, the data value of C, M, and Y is removed to a black part (UCR processing), and the shade gradation data of Bk are added instead (BP processing). Then, the reading property of the color CCD sensor 14 (refer to drawing 1) and the attachment characteristics to the tracing paper of a toner are taken into consideration, and after predetermined masking processing is performed so that the same color as a manuscript may be reproduced in the copy paper, the data of a color according to a printing process are outputted.

[0009] Spatial filter processing of smoothing, edge enhancement, etc. is performed to the data of any 1 color of C, M, Y, and Bk(s) which are outputted from the UCR/BP masking processing section 127 in the MTF

amendment section 128. In the variable power migration processing section 129, the data from the MTF amendment section 128 are used, and predetermined variable power migration processing is performed according to the copy scale factor and the content of edit which are set up. Then, in gamma amendment section 130, after predetermined gradation amendment is performed to the data inputted, these data are outputted to the print head section 31. In the print head section 31, D/A conversion of the gradation data inputted is carried out, a semiconductor laser driving signal is generated, by this driving signal, semiconductor laser emits light and the photo conductor drum 41 (refer to drawing 1) is exposed.

[0010] Next, the Bataan recognition section 131 for forbidding formation of the image of a copy prohibition object is explained.

[0011] The data by which the shading compensation was carried out are transmitted also to the pattern recognition section 131 while they are outputted to a reflection factor / concentration converter 126 through the sensor aperture location amendment section 125 from the shading compensation processing section 124, as mentioned above. The pattern recognition section 131 contains the pattern-matching section 136 which carries out the comparative judgment of the image remembered to be the image memory 134 which memorizes ROM132 which memorizes the description part of a copy prohibition manuscript, and the image data sent to the Bataan recognition section 131, and the image of a copy prohibition manuscript.

[0012] The image data sent is compared with the image data of a copy prohibition manuscript by the pattern-matching section 136, and when whenever [coincidence] is high, a copy inhibiting signal (control signal) is generated and it is told to the print head section 31. Black-lacquered data are sent, tracing paper is painted out by this and formation of the image of a copy prohibition object is forbidden by the event of whenever [coincidence] being judged to be high to the back.

[0013] There is little image data of a copy prohibition object, and although a problem does not become when whenever [with all the copy prohibition objects memorized / coincidence] can judge in a short time, the content of ROM132 with which many copy prohibition objects exist the bill in the world, a check, negotiable securities, a coupon ticket, various tickets, a stamp, a revenue stamp, a parking ticket, etc., and the description part of a copy prohibition object is remembered to be increases.

[0014] Although it was such a digital color copying machine, for example,

sequence of a printing process was set to C, M, Y, and Bk, whenever [coincidence] is low and which copy prohibition manuscript was continuing copy actuation at the time of C, M, and Y When it is judged in the middle of the last Bk that whenever [coincidence] is high, and when the sequence that pattern matching of the data of the manuscript memorized by ROM132 and the high copy prohibition object of whenever [coincidence] is carried out becomes the last, Even if tracing paper is made into black painting from the event of being judged, just before being judged, if it usually passes, the copy is performed corresponding to the data of C, M, Y, and Bk and it restricts to this part, it is possible [*****] to perform an illegal copy.

[0015] In order not to carry out a completely illegal copy with the conventional digital color copying machine using the above methods, it is necessary to reduce the classes of copy prohibition object memorized to ROM132. 1 time of a thing also has a count of a scan, and the time amount which formation of an image takes in this case becomes still shorter, and must stop moreover, having to reduce the classes of copy prohibition object further so that the full colour copying machine of a tandem system may see.

[0016] This invention was made in order to solve such a trouble, and the object is a simple configuration and it is offering the image formation equipment which does not form some images, either to the manuscript specified that it forbids formation of an image beforehand.

[0017]

[Means for Solving the Problem] Judge whether the image data as which the generated image data was specified beforehand is included, generate image data from the image of a manuscript, invention according to claim 1 forms an image based on image data, when it is judged that the image data as which the generated image data was specified is not included, and when it is judged that the image data as which the generated image data was specified is included, it is image-formation equipment which blocks formation of an image.

[0018] This image formation equipment is characterized by delaying initiation of formation of an image. According to invention according to claim 1, initiation of formation of an image is delayed. The image formation equipment which does not form some images to this manuscript with a simple configuration by this, either, even if decision whether the image data specified beforehand is included takes much time amount to the image data generated from a manuscript is offered.

[0019]

[Embodiment of the Invention] Hereafter, the digital color copying machine which is the gestalt of operation of this invention is explained, referring to a drawing.

[0020] Drawing 1 is the typical sectional view showing the whole digital color copying machine configuration which is the gestalt of operation of the 1st of this invention. A digital color copying machine is roughly divided into the image reader section 100 which reads a manuscript image, and the body section 200 reproducing the image read in the image reader section 100.

[0021] In the image reader section 100, it reads with the scanner section 10, a motor 11, a platen 15, and the white plate 16, the signal-processing section 20 is contained, and the print head section 31, a reflecting mirror 37, the photo conductor drum 41, the eraser lamp 42, the electrification charger 43, the toner development machines 45a-45d, the imprint charge 46, the separation pawl 47, an anchorage device 48, a paper output tray 49, the form cassette 50, the imprint drum 51, and the chucking device 52 are included in the body section 200.

[0022] Moreover, the scanner section 10 is equipped with the exposure lamp 12, the rod-lens array 13, and the color CCD sensor 14, and the color CCD sensor 14 consists of a CCD sensor of three lines of the CCD sensor for R data and the CCD sensor for G data for reading RGB digital image data, respectively, and the CCD sensor for B data.

[0023] In this digital color copying machine, in case a manuscript is read, the scanner section 10 is moved in the direction of an arrow head (the direction of vertical scanning) by the motor 11, and after the white plate 16 for a shading compensation is scanned, the manuscript laid on the platen 15 is scanned. If light is irradiated by the manuscript with the exposure lamp 12 of the scanner section 10, the light which the reflected light from a manuscript was condensed by the rod-lens array 13, and was condensed by the color CCD sensor 14 will be changed into an electrical signal. As mentioned above, the color CCD sensor 14 of three lines outputs the multiple-value electrical signal of three colors of R, G, and B, and the multiple-value electrical signal of R, G, and B is changed into one 256 shade gradation data of Y, M, C, and Bk (yellow, MAZENDA, cyanogen, black) in the reading signal-processing section 20.

[0024] In the print head section 31, D/A conversion of one 256 gradation data of Y, M, C, and Bk(s) which are outputted from the reading signal-processing section 20 is carried out, and a laser diode driving signal is generated. The laser diode in the print head section 31

drives with this laser diode driving signal.

[0025] Thus, the laser beam which emits light with the laser diode to drive exposes the photo conductor drum 41 by which revolution actuation is carried out through a reflecting mirror 37, and the image of a manuscript is formed on the photo conductor of the photo conductor drum 41. Before this photo conductor drum 41 receives exposure for every copy, it was irradiated by the eraser lamp 42 and is uniformly charged with the electrification charger 43, and on the photo conductor drum 41, an electrostatic latent image is formed of exposure. Thus, any one of the toner development machines 45a-45d of Y, M, C, and Bk is chosen to the electrostatic latent image formed, and the electrostatic latent image on the photo conductor drum 41 is developed.

[0026] The printing process from the scan of these manuscripts [like] to development is repeatedly performed 4 times about Y, M, C, and Bk, respectively, and the scanner section 10 repeats scanning actuation synchronizing with actuation of the photo conductor drum 41 and the imprint drum 51. After these, the separation pawl 47 operates and tracing paper is separated from the imprint drum 51. It is fixed to the toner in the copy paper by the anchorage device 48, and paper is delivered to tracing paper on a paper output tray 49. In addition, paper is fed to tracing paper from the form cassette 50, and chucking of the head is carried out by the chucking device 52 on the imprint drum 51 so that a location gap may not arise at the time of an imprint.

[0027] Next, the processing to the copy prohibition object in these above digital color copying machines is explained using drawing 2 .

[0028] Drawing 2 is a block diagram for explaining the configuration of the reading signal-processing section 20 of this digital color copying machine. The same sign is used for the same part as the reading signal-processing section 20 of the conventional digital color copying machine shown in drawing 5 in this drawing 2 .

[0029] In this digital color copying machine, after finishing processing in the image-processing section A (the analog processing section 121, the A/D-conversion section 122, the serial signal-ized processing section 123, the shading compensation section 124, sensor aperture location amendment section 125) according to the flow of the image processing in the conventional digital color copying machine explained with drawing 5 , while image data is stored in the delay memory 140, it is stored also in the image memory 134 of the pattern recognition section 131. The image data stored in the delay memory 140 is held in the delay memory 140 until the predetermined signal S is sent from the pattern recognition

section 131, and it is transmitted to the image-processing section B (a reflection factor / concentration converter 126, the UCR/BP masking processing section 127, the MTF amendment section 128, the variable power migration processing section 129, gamma amendment section 130) after that. the signal which tells that pattern matching was completed as a predetermined signal S of the pattern recognition section 131 here, the signal which tells having become predetermined within a time [with the time amount concerning the remaining pattern matching], or the signal which conveys that it was judged that the image data of a manuscript was in agreement with the copy prohibition object can be used.

[0030] Moreover, instead of being until the signal which exists from the pattern recognition section 131 is sent, timing to which the delay memory 140 transmits image data to the image-processing section B can also be carried out until the time amount beforehand defined with the timer passes.

[0031] While the image data transfer is delayed by the delay memory 140, a configuration, a color, concentration distribution, etc. are compared with the data with which the image data stored in the image memory of the pattern recognition section 131 was called from ROM (drawing 5 is the same as that of ROM132) in which the image data of a copy prohibition object is stored, and pattern matching is performed. Consequently, when a certain threshold is exceeded, it is judged that a manuscript is a copy prohibition object, and directions by the control signal are sent to a copy process so that nullification processing for cancelling formation of an image may be performed.

[0032] When a manuscript is specifically judged to be a copy prohibition object by this nullification processing, processing of image data being transmitted to the print head section 31 is performed so that all image concentration data may be set to 255, and the whole image is painted out by this. At this time, it becomes possible with this digital color copying machine to paint out the whole tracing paper according to the delay from which image data was held by the delay memory 140 by the copy process unlike the conventional digital color copying machine.

[0033] It is the same as that of this above digital color copying machine or these above, and the time amount which delays the image data transfer to the image-processing section B by the delay memory 140 in the digital color copying machine of the tandem system with which printing methods differ is examined.

[0034] Drawing 3 is drawing for explaining the timing which sends the

predetermined signal S from the pattern recognition section 131 to the delay memory 140. Drawing 3 (a) is drawing showing time amount until it starts printing corresponding to the image data of Bk after starting an image data transfer towards the image-processing section B from the delay memory 140 with the digital color copying machine of a tandem system. Drawing 3 (b) is drawing showing time amount until it starts printing corresponding to the image data of Bk after starting an image data transfer towards the image-processing section B from the delay memory 140 with digital color copying machines other than a tandem system. Drawing 3 (c) is drawing for explaining the time amount delayed by the delay memory 140.

[0035] In these drawing 3 (a) – drawing 3 (c), the time of day (time of day when image data is transmitted to the delay memory 140) which starts pattern matching in the pattern recognition section 131 Time of day O If time of day which starts printing corresponding to the image data of time of day A and Bk for the time of day which starts an image data transfer towards the image-processing section B (refer to drawing 2) from the delay memory 140 is made into time of day C After starting an image data transfer towards the image-processing section B for the time amount T which pattern matching takes from the time of day O to the time of day C, and from the time of day A to the time of day C from the delay memory 140, it can express the time amount t1 until it starts printing corresponding to the image data of Bk.

[0036] At drawing 3 (a) and drawing 3 (b), after starting an image data transfer towards the image-processing section B from the delay memory 140, with the digital color copying machine of a tandem system, the time amount t1 until it starts printing corresponding to the image data of Bk for black painting of nullification processing shows that it is shorter than digital color copying machines other than a tandem system, and must complete pattern matching by progress of this time amount t1.

[0037] namely, the time amount which delays the image data transfer to the image-processing section B by the delay memory 140 as shown in drawing 3 (c) -- time amount t1 -- responding -- the longest -- the time amount ($T-t_1$) from time of day O to time of day A -- then, it is good. Moreover, when coincidence of a pattern is decided from time of day O at the time of day B before progress of time amount ($T-t_1$) and pattern matching is completed using the coincidence signal which tells that a pattern is in agreement, the image data of Bk for black painting of nullification processing can be made to output to B from the delay memory 140 at the event.

[0038] The digital color copying machine which does not form some images to this manuscript with a simple configuration by these, either, even if decision whether the image data specified beforehand is included takes much time amount to the image data generated from a manuscript is offered.

[0039] Moreover, delay memory can be used as follows. It explains comparing with the conventional digital color copying machine the timing sequence of the input/processing of the image in a digital color copying machine, and print actuation which are the gestalt of the operation of the 2nd of this invention which has this delay memory.

[0040] Drawing 4 is drawing showing the timing sequence of the input of the image in a digital color copying machine and print actuation which are the gestalt of operation of the 2nd of this invention, and drawing 6 is drawing showing the timing sequence of an input/processing of the image in the conventional digital color copying machine, and print actuation. Let the 2nd whole digital color copying machine configuration of the gestalt of operation, the configuration of the reading signal-processing section, etc. be the same things as the 1st whole digital color copying machine configuration of the gestalt of operation, the configuration of the reading signal-processing section 20, etc.

[0041] In the conventional digital color copying machine, it is carried out by the input/processing, and print actuation of an image in time amount t_0 almost simultaneous, and pattern matching is also processed in this time amount t_0 . On the other hand, although carried out by the input (reading of a manuscript) of an image, and storing of the image data to delay memory almost simultaneous in this digital color copying machine, print actuation is performed by being delayed to the input of an image.

[0042] This digital color copying machine has the delay memory for 1 page, and print actuation is delayed by 1 page by this delay memory. In this digital color copying machine, pattern matching to the data for 4 pages of Y, M, C, and Bk is completed in time amount t_1 , and an image data transfer is delayed by delay memory so that printing of the last Bk for the black painting which performs nullification processing can be made to meet the deadline.

[0043] The digital color copying machine which does not form some images to this manuscript with a simple configuration by these, either, even if decision whether the image data specified beforehand is included takes much time amount to the image data generated from a manuscript is offered.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] Especially this invention generates image data from the image of a manuscript about image formation equipment, and it is related with the image formation equipment which judges whether the image data as which image data was specified beforehand is included.

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PRIOR ART

[Description of the Prior Art] Conventionally, forgery of a bill, a check, negotiable securities, etc. poses a problem with improvement in the precision of a digital color copying machine. In order to cope with the forgery using such a digital color copying machine, with the copying machine currently indicated by JP,55-111977,A, the image data of copy prohibition objects, such as a bill, a check, and negotiable securities, is memorized beforehand, pattern matching of the image data of a manuscript and the image data of these copy prohibition objects is performed during copy actuation, and when it is judged that a manuscript corresponds to a copy prohibition object with this pattern matching, formation of the image in the copy paper is forbidden.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, the part which usually passes and is copied with the conventional digital color copying machine mentioned above today with many copy prohibition objects even if it forbids copy actuation when are judged as a copy prohibition object in the way of the last of processing of Bataan matching, and copy actuation is almost completed and it is judged as a copy prohibition object if pattern matching is carried out one by one may be.

[0004] Below, drawing 5 is used and formation of the image to the copy prohibition object in such a conventional digital color copying machine is explained.

[0005] Drawing 5 is a block diagram for explaining the configuration of the reading signal-processing section 20 of the conventional digital color copying machine. The conventional digital color copying machine whole configuration is the same as that of the digital color copying machine which is one of the gestalten of the operation of this invention which uses and explains drawing 1 later.

[0006] In the reading signal-processing section 20 (refer to drawing 1) of the conventional digital color copying machine, the multiple-value electrical signal of three colors of R, G, and B which were obtained by the color CCD sensor 14 is first amplified in the analog processing section 121, optimization processing is performed, and these electrical signals are changed into the multiple-value digital signal of R, G, and B in the A/D-conversion section 122, respectively.

[0007] The digital signal outputted by the A/D-conversion section 122 is inputted into the shading compensation section 124 through the serial signal-ized processing section 123. In the shading compensation section 124, the data with which the shading compensation of the shading compensation was performed and carried out based on the RGB digital

image data of the white plate 16 (refer to drawing 1) read before scanning a manuscript are outputted to a reflection factor / concentration converter 126, and the pattern recognition section 131 through the sensor aperture location amendment 125.

[0008] In a reflection factor / concentration converter 126, R and G which are reflection factor data, and B data are changed into DR and DG which are 256 shade gradation data, and DB data, and DR, DG, and DB data are outputted to the UCR/BP masking processing section 127. In the UCR/BP masking processing section 127, DR, DG, and DB data are changed into the 256 shade gradation data of C, M, Y, and Bk, in order to raise black repeatability, the data value of C, M, and Y is removed to a black part (UCR processing), and the shade gradation data of Bk are added instead (BP processing). Then, the reading property of the color CCD sensor 14 (refer to drawing 1) and the attachment characteristics to the tracing paper of a toner are taken into consideration, and after predetermined masking processing is performed so that the same color as a manuscript may be reproduced in the copy paper, the data of a color according to a printing process are outputted.

[0009] Spatial filter processing of smoothing, edge enhancement, etc. is performed to the data of any 1 color of C, M, Y, and Bk(s) which are outputted from the UCR/BP masking processing section 127 in the MTF amendment section 128. In the variable power migration processing section 129, the data from the MTF amendment section 128 are used, and predetermined variable power migration processing is performed according to the copy scale factor and the content of edit which are set up. Then, in gamma amendment section 130, after predetermined gradation amendment is performed to the data inputted, these data are outputted to the print head section 31. In the print head section 31, D/A conversion of the gradation data inputted is carried out, a semiconductor laser driving signal is generated, by this driving signal, semiconductor laser emits light and the photo conductor drum 41 (refer to drawing 1) is exposed.

[0010] Next, the Bataan recognition section 131 for forbidding formation of the image of a copy prohibition object is explained.

[0011] The data by which the shading compensation was carried out are transmitted also to the pattern recognition section 131 while they are outputted to a reflection factor / concentration converter 126 through the sensor aperture location amendment section 125 from the shading compensation processing section 124, as mentioned above. The pattern recognition section 131 contains the pattern-matching section 136

which carries out the comparative judgment of the image remembered to be the image memory 134 which memorizes ROM132 which memorizes the description part of a copy prohibition manuscript, and the image data sent to the Bataan recognition section 131, and the image of a copy prohibition manuscript.

[0012] The image data sent is compared with the image data of a copy prohibition manuscript by the pattern-matching section 136, and when whenever [coincidence] is high, a copy inhibiting signal (control signal) is generated and it is told to the print head section 31. Black-lacquered data are sent, tracing paper is painted out by this and formation of the image of a copy prohibition object is forbidden by the event of whenever [coincidence] being judged to be high to the back.

[0013] There is little image data of a copy prohibition object, and although a problem does not become when whenever [with all the copy prohibition objects memorized / coincidence] can judge in a short time, the content of ROM132 with which many copy prohibition objects exist the bill in the world, a check, negotiable securities, a coupon ticket, various tickets, a stamp, a revenue stamp, a parking ticket, etc., and the description part of a copy prohibition object is remembered to be increases.

[0014] Although it was such a digital color copying machine, for example, sequence of a printing process was set to C, M, Y, and Bk, whenever [coincidence] is low and which copy prohibition manuscript was continuing copy actuation at the time of C, M, and Y When it is judged in the middle of the last Bk that whenever [coincidence] is high, and when the sequence that pattern matching of the data of the manuscript memorized by ROM132 and the high copy prohibition object of whenever [coincidence] is carried out becomes the last, Even if tracing paper is made into black painting from the event of being judged, just before being judged, if it usually passes, the copy is performed corresponding to the data of C, M, Y, and Bk and it restricts to this part, it is possible [*****] to perform an illegal copy.

[0015] In order not to carry out a completely illegal copy with the conventional digital color copying machine using the above methods, it is necessary to reduce the classes of copy prohibition object memorized to ROM132. 1 time of a thing also has a count of a scan, and the time amount which formation of an image takes in this case becomes still shorter, and must stop moreover, having to reduce the classes of copy prohibition object further so that the full colour copying machine of a tandem system may see.

[0016] This invention was made in order to solve such a trouble, and the object is a simple configuration and it is offering the image formation equipment which does not form some images, either to the manuscript specified that it forbids formation of an image beforehand.

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MEANS

[Means for Solving the Problem] Judge whether the image data as which the generated image data was specified beforehand is included, generate image data from the image of a manuscript, invention according to claim 1 forms an image based on image data, when it is judged that the image data as which the generated image data was specified is not included, and when it is judged that the image data as which the generated image data was specified is included, it is image-formation equipment which blocks formation of an image.

[0018] This image formation equipment is characterized by delaying initiation of formation of an image. According to invention according to claim 1, initiation of formation of an image is delayed. The image formation equipment which does not form some images to this manuscript with a simple configuration by this, either, even if decision whether the image data specified beforehand is included takes much time amount to the image data generated from a manuscript is offered.

[0019]

[Embodiment of the Invention] Hereafter, the digital color copying machine which is the gestalt of operation of this invention is explained, referring to a drawing.

[0020] Drawing 1 is the typical sectional view showing the whole digital color copying machine configuration which is the gestalt of operation of the 1st of this invention. A digital color copying machine is roughly divided into the image reader section 100 which reads a manuscript image, and the body section 200 reproducing the image read in the image reader section 100.

[0021] In the image reader section 100, it reads with the scanner section 10, a motor 11, a platen 15, and the white plate 16, the signal-processing section 20 is contained, and the print head section 31, a

reflecting mirror 37, the photo conductor drum 41, the eraser lamp 42, the electrification charger 43, the toner development machines 45a-45d, the imprint charge 46, the separation pawl 47, an anchorage device 48, a paper output tray 49, the form cassette 50, the imprint drum 51, and the chucking device 52 are included in the body section 200.

[0022] Moreover, the scanner section 10 is equipped with the exposure lamp 12, the rod-lens array 13, and the color CCD sensor 14, and the color CCD sensor 14 consists of a CCD sensor of three lines of the CCD sensor for R data and the CCD sensor for G data for reading RGB digital image data, respectively, and the CCD sensor for B data.

[0023] In this digital color copying machine, in case a manuscript is read, the scanner section 10 is moved in the direction of an arrow head (the direction of vertical scanning) by the motor 11, and after the white plate 16 for a shading compensation is scanned, the manuscript laid on the platen 15 is scanned. If light is irradiated by the manuscript with the exposure lamp 12 of the scanner section 10, the light which the reflected light from a manuscript was condensed by the rod-lens array 13, and was condensed by the color CCD sensor 14 will be changed into an electrical signal. As mentioned above, the color CCD sensor 14 of three lines outputs the multiple-value electrical signal of three colors of R, G, and B, and the multiple-value electrical signal of R, G, and B is changed into one 256 shade gradation data of Y, M, C, and Bk (yellow, MAZENDA, cyanogen, black) in the reading signal-processing section 20.

[0024] In the print head section 31, D/A conversion of one 256 gradation data of Y, M, C, and Bk(s) which are outputted from the reading signal-processing section 20 is carried out, and a laser diode driving signal is generated. The laser diode in the print head section 31 drives with this laser diode driving signal.

[0025] Thus, the laser beam which emits light with the laser diode to drive exposes the photo conductor drum 41 by which revolution actuation is carried out through a reflecting mirror 37, and the image of a manuscript is formed on the photo conductor of the photo conductor drum 41. Before this photo conductor drum 41 receives exposure for every copy, it was irradiated by the eraser lamp 42 and is uniformly charged with the electrification charger 43, and on the photo conductor drum 41, an electrostatic latent image is formed of exposure. Thus, any one of the toner development machines 45a-45d of Y, M, C, and Bk is chosen to the electrostatic latent image formed, and the electrostatic latent image on the photo conductor drum 41 is developed.

[0026] The printing process from the scan of these manuscripts [like] to development is repeatedly performed 4 times about Y, M, C, and Bk, respectively, and the scanner section 10 repeats scanning actuation synchronizing with actuation of the photo conductor drum 41 and the imprint drum 51. After these, the separation pawl 47 operates and tracing paper is separated from the imprint drum 51. It is fixed to the toner in the copy paper by the anchorage device 48, and paper is delivered to tracing paper on a paper output tray 49. In addition, paper is fed to tracing paper from the form cassette 50, and chucking of the head is carried out by the chucking device 52 on the imprint drum 51 so that a location gap may not arise at the time of an imprint.

[0027] Next, the processing to the copy prohibition object in these above digital color copying machines is explained using drawing 2.

[0028] Drawing 2 is a block diagram for explaining the configuration of the reading signal-processing section 20 of this digital color copying machine. The same sign is used for the same part as the reading signal-processing section 20 of the conventional digital color copying machine shown in drawing 5 in this drawing 2.

[0029] In this digital color copying machine, after finishing processing in the image-processing section A (the analog processing section 121, the A/D-conversion section 122, the serial signal-ized processing section 123, the shading compensation section 124, sensor aperture location amendment section 125) according to the flow of the image processing in the conventional digital color copying machine explained with drawing 5, while image data is stored in the delay memory 140, it is stored also in the image memory 134 of the pattern recognition section 131. The image data stored in the delay memory 140 is held in the delay memory 140 until the predetermined signal S is sent from the pattern recognition section 131, and it is transmitted to the image-processing section B (a reflection factor / concentration converter 126, the UCR/BP masking processing section 127, the MTF amendment section 128, the variable power migration processing section 129, gamma amendment section 130) after that. the signal which tells that pattern matching was completed as a predetermined signal S of the pattern recognition section 131 here, the signal which tells having become predetermined within a time [with the time amount concerning the remaining pattern matching], or the signal which conveys that it was judged that the image data of a manuscript was in agreement with the copy prohibition object can be used.

[0030] Moreover, instead of being until the signal which exists from the

pattern recognition section 131 is sent, timing to which the delay memory 140 transmits image data to the image-processing section B can also be carried out until the time amount beforehand defined with the timer passes.

[0031] While the image data transfer is delayed by the delay memory 140, a configuration, a color, concentration distribution, etc. are compared with the data with which the image data stored in the image memory of the pattern recognition section 131 was called from ROM (drawing 5 is the same as that of ROM132) in which the image data of a copy prohibition object is stored, and pattern matching is performed. Consequently, when a certain threshold is exceeded, it is judged that a manuscript is a copy prohibition object, and directions by the control signal are sent to a copy process so that nullification processing for cancelling formation of an image may be performed.

[0032] When a manuscript is specifically judged to be a copy prohibition object by this nullification processing, processing of image data being transmitted to the print head section 31 is performed so that all image concentration data may be set to 255, and the whole image is painted out by this. At this time, it becomes possible with this digital color copying machine to paint out the whole tracing paper according to the delay from which image data was held by the delay memory 140 by the copy process unlike the conventional digital color copying machine.

[0033] It is the same as that of this above digital color copying machine or these above, and the time amount which delays the image data transfer to the image-processing section B by the delay memory 140 in the digital color copying machine of the tandem system with which printing methods differ is examined.

[0034] Drawing 3 is drawing for explaining the timing which sends the predetermined signal S from the pattern recognition section 131 to the delay memory 140. Drawing 3 (a) is drawing showing time amount until it starts printing corresponding to the image data of Bk after starting an image data transfer towards the image-processing section B from the delay memory 140 with the digital color copying machine of a tandem system. Drawing 3 (b) is drawing showing time amount until it starts printing corresponding to the image data of Bk after starting an image data transfer towards the image-processing section B from the delay memory 140 with digital color copying machines other than a tandem system. Drawing 3 (c) is drawing for explaining the time amount delayed by the delay memory 140.

[0035] In these drawing 3 (a) – drawing 3 (c), the time of day (time of

day when image data is transmitted to the delay memory 140) which starts pattern matching in the pattern recognition section 131 Time of day O If time of day which starts printing corresponding to the image data of time of day A and Bk for the time of day which starts an image data transfer towards the image-processing section B (refer to drawing 2) from the delay memory 140 is made into time of day C After starting an image data transfer towards the image-processing section B for the time amount T which pattern matching takes from the time of day O to the time of day C, and from the time of day A to the time of day C from the delay memory 140, it can express the time amount t1 until it starts printing corresponding to the image data of Bk.

[0036] At drawing 3 (a) and drawing 3 (b), after starting an image data transfer towards the image-processing section B from the delay memory 140, with the digital color copying machine of a tandem system, the time amount t1 until it starts printing corresponding to the image data of Bk for black painting of nullification processing shows that it is shorter than digital color copying machines other than a tandem system, and must complete pattern matching by progress of this time amount t1.

[0037] namely, the time amount which delays the image data transfer to the image-processing section B by the delay memory 140 as shown in drawing 3 (c) -- time amount t1 -- responding -- the longest -- the time amount ($T-t_1$) from time of day O to time of day A -- then, it is good. Moreover, when coincidence of a pattern is decided from time of day O at the time of day B before progress of time amount ($T-t_1$) and pattern matching is completed using the coincidence signal which tells that a pattern is in agreement, the image data of Bk for black painting of nullification processing can be made to output to B from the delay memory 140 at the event.

[0038] The digital color copying machine which does not form some images to this manuscript with a simple configuration by these, either, even if decision whether the image data specified beforehand is included takes much time amount to the image data generated from a manuscript is offered.

[0039] Moreover, delay memory can be used as follows. It explains comparing with the conventional digital color copying machine the timing sequence of the input/processing of the image in a digital color copying machine, and print actuation which are the gestalt of the operation of the 2nd of this invention which has this delay memory.

[0040] Drawing 4 is drawing showing the timing sequence of the input of the image in a digital color copying machine and print actuation which

are the gestalt of operation of the 2nd of this invention, and drawing 6 is drawing showing the timing sequence of an input/processing of the image in the conventional digital color copying machine, and print actuation. Let the 2nd whole digital color copying machine configuration of the gestalt of operation, the configuration of the reading signal-processing section, etc. be the same things as the 1st whole digital color copying machine configuration of the gestalt of operation, the configuration of the reading signal-processing section 20, etc.

[0041] In the conventional digital color copying machine, it is carried out by the input/processing, and print actuation of an image in time amount t_0 almost simultaneous, and pattern matching is also processed in this time amount t_0 . On the other hand, although carried out by the input (reading of a manuscript) of an image, and storing of the image data to delay memory almost simultaneous in this digital color copying machine, print actuation is performed by being delayed to the input of an image.

[0042] This digital color copying machine has the delay memory for 1 page, and print actuation is delayed by 1 page by this delay memory. In this digital color copying machine, pattern matching to the data for 4 pages of Y, M, C, and Bk is completed in time amount t_1 , and an image data transfer is delayed by delay memory so that printing of the last Bk for the black painting which performs nullification processing can be made to meet the deadline.

[0043] The digital color copying machine which does not form some images to this manuscript with a simple configuration by these, either, even if decision whether the image data specified beforehand is included takes much time amount to the image data generated from a manuscript is offered.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the typical sectional view showing the whole digital color copying machine configuration which is the gestalt of operation of the 1st of this invention.

[Drawing 2] It is a block diagram for explaining the configuration of the reading signal-processing section 20 of this digital color copying machine.

[Drawing 3] It is drawing for explaining the timing which sends the predetermined signal S from the pattern recognition section 131 to the delay memory 140.

[Drawing 4] It is drawing showing the timing sequence of the input of an image and print actuation which are the gestalt of operation of the 2nd of this invention.

[Drawing 5] It is a block diagram for explaining the configuration of the reading signal-processing section 20 of the conventional digital color copying machine.

[Drawing 6] It is drawing showing the timing sequence of an input/processing of the image in the conventional digital color copying machine, and print actuation.

[Description of Notations]

10 Scanner Section

14 Color CCD Sensor

20 Reading Signal-Processing Section

31 Print Head Section

100 Image Reader Section

121 Analog Processing Section

122 A/D-Conversion Section

123 Serial Signal-ized Processing Section

- 124 Shading Compensation Processing Section
- 125 Sensor Aperture Location Amendment Section
- 126 Reflection Factor / Concentration Converter
- 127 UCR/BP Masking Processing Section
- 128 MTF Amendment Section
- 129 Variable Power Migration Processing Section
- 130 Gamma Amendment Section
- 131 Pattern Recognition Section
- 132 ROM
- 134 Image Memory
- 136 Pattern-Matching Section
- 140 Delay Memory
- 200 Body Section

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CORRECTION OR AMENDMENT

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[Procedure amendment]

[Filing Date] September 13, Heisei 14 (2002. 9.13)

[Procedure amendment 1]

[Document to be Amended] Description

[Item(s) to be Amended] Claim

[Method of Amendment] Modification

[Proposed Amendment]

[Claim(s)]

[Claim 1] An image reading means to read the image of a manuscript and to generate image data,

An image-processing means to perform an image processing to the image data from said image reading means,

A decision means to judge whether the specific image data as which said image data was beforehand specified in parallel to the image processing by said image-processing means is included,

It is the control means which blocks normal image formation when it is judged that image formation is permitted when it is judged that said specific image data is not contained by said decision means, and the specific image data concerned is contained,

A delay means to delay the image data transfer processed by said image-processing means,

Image formation equipment characterized by ****(ing).

[Claim 2] Said delay means is image formation equipment according to claim 1 characterized by delaying an image data transfer until a predetermined signal is inputted from said judgment means.

[Claim 3] Said delay means is image formation equipment according to claim 1 characterized by delaying an image data transfer until the time amount defined beforehand passes.

[Claim 4] Said delay means is image formation equipment according to claim 1 characterized by delaying an image data transfer by the delay memory concerned for 1 page including the delay memory for 1 page.

[Procedure amendment 2]

[Document to be Amended] Description

[Item(s) to be Amended] 0017

[Method of Amendment] Modification

[Proposed Amendment]

[0017]

[Means for Solving the Problem] An image reading means for this invention to read the image of a manuscript and to generate image data, An image-processing means to perform an image processing to the image data from said image reading means, A decision means to judge whether the specific image data as which said image data was beforehand specified in parallel to the image processing by said image-processing means is included, The control means which blocks normal image formation when it is judged that image formation is permitted when it is judged that said specific image data is not contained by said decision means, and the specific image data concerned is contained, It is

image formation equipment which has a delay means to delay the image data transfer processed by said image-processing means. And for example, said delay means is characterized by delaying an image data transfer until a predetermined signal is inputted from said judgment means. Moreover, for example, said delay means is characterized by delaying an image data transfer until the time amount defined beforehand passes. Further for example, said delay means is characterized by delaying an image data transfer by the delay memory concerned for 1 page including the delay memory for 1 page.

[Procedure amendment 3]

[Document to be Amended] Description

[Item(s) to be Amended] 0018

[Method of Amendment] Modification

[Proposed Amendment]

[0018] According to the image formation equipment of the invention in this application, the image data transfer by which the image processing was carried out is delayed, and initiation of formation of an image is delayed. The image formation equipment which can prevent certainly normal image formation with a simple configuration by this to the image data of the manuscript which contains the image data specified beforehand even if decision whether the image data specified beforehand is included takes much time amount to the image data generated from a manuscript is offered.

[Translation done.]